

Protein Purification. Principles, High-Resolution Methods, and Applications. 2nd Edition. Edited by Jan-Christer Janson and Lars Ryden. Wiley-Liss, John Wiley & Sons, Inc., New York. 1998. x + 695 pp. 16 x 24 cm. ISBN 0-471-18626-0. \$74.95.

This book may not be one normally perused by readers of this Journal. It is an update of methods used in the purification of proteins, to which chemical class belong most current biotechnology-derived drugs (except for DNA vaccines and oligonucleotide antisense drugs). It can serve as a general compendium of current methodologies used in academic and industrial biotechnology drug discovery laboratories.

In contrast to drugs derived from organic synthesis, protein drugs are derived using recombinant DNA technology via only a few pathways using mammalian cell culture (Chinese hamster ovary cells) or bacterial fermentation (*E. coli*). Methods of extraction and purification from culture broths are often predicated on the intrinsic properties unique to the protein drug of interest, and there are many such methods. Hence, this book reviews a wide range: gel filtration, ion-exchange chromatography, chromatofocusing, HPLC, hydrophobic interaction chromatography, metal chelate chromatography, affinity chromatography, two-phase affinity partitioning systems, and several electrophoresis methods.

Each chapter centers on a given method and includes (a) an introduction to the physical and/or chemical principles and mechanisms underlying the method, (b) directions and equipment for carrying out the method, and (c) some useful examples from the literature. Like

many edited monographs, this one suffers from some lack of consistency and some topical redundancy among chapters. But, in general, the chapter authors have hewed to the pattern set by the editors. This updated, second edition includes citation of literature since 1989, which seems to be comprised mainly of newer examples of usage of the methods. The electrophoresis section contains the bulk of the new text (four chapters) over the previous edition. Despite availability of ingenious equipment for handling larger volumes of protein solutions, the adaptation of this technique to protein purification for clinical testing or manufacturing has been almost nil, probably due to the complexity of the method.

Because most of the cited examples deal with bench-scale applications, workers involved with biotechnology drug discovery, e.g., preparing drug targets such as enzymes and receptors, could find this volume useful as a reference. Scientists involved with biotechnology process development will need to consult other books to gain insight into utilizing the basic methods addressed in this book in process scaleup, methods validation, and feasibility for executing them under Good Manufacturing Practices.

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